

COMPLIMENTARY WEBINAR PRESENTATION

# FOOD EVOLUTION: A DISCUSSION FOR REGISTERED DIETITIANS

EARN 1 CPEU

BROUGHT TO YOU THROUGH THE SUPPORT OF



PRESENTED BY TRACE SHEEHAN AND CHRIS VOGLIANO, MS, RD, ON THURSDAY, SEPTEMBER 27 FROM 2:00-3:00PM ET

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## How Do We Have Better Conversations?



Having been an active observer of the great GMO debate for almost the last 5 years, I've seen the good, the bad, and the ugly from both sides all over the world. And guilty of having more 'less than constructive' conversations than I'd care to admit... So much so, I recently came up with this acronym...




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**B**last  
**I**nformation  
**O**ut  
**T**ill  
**E**verybody's  
**C**onfused &  
**H**angry




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But going beyond just GMOs, what have I learned that might be helpful for anybody looking to communicate science?

Well, it's been said the longer you fight, the deeper the trenches become.

But what I've seen is that all sides have too much in common to be perpetually polarized.

And the real 'breakthroughs' for me have come from watching people who know how to find that common ground.



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**LYNAS & Alison CLIPS**



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Mark Lynas changed his mind.

Which is not an easy thing for any of us to do.

But his story shows it is possible.



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“  
But Alison is the one I've learned the most from...  
She listens. That's the key.”



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“  
You can have all the science in the world, but if the person you're talking with  
doesn't trust you, then nothing you have to say matters.”



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“  
And the only way that person is going to trust you is if they believe you really  
understand where they're coming from. That what's important to them is  
important to you.”



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## GMOs And The Future of Food




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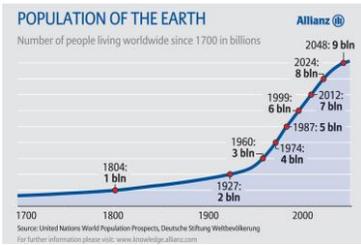
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## Population is Growing




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## Diets are Changing




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Source: ECLAIR Big Data





## Non-Food Applications



- Synthetic human insulin used to treat diabetes deserves a mention.
- With transgenic GMO technology, insulin is able to be synthesized in a lab.



<http://pharmen.apis.comab.org/comm/32/11/about>

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## CRISPR/Cas9 Editing



### • CRISPR is:

- Faster
- Cheaper
- More accessible

### • Agricultural Uses

- C4 Rice Consortium<sup>1</sup>
- Climate resilient crops;
  - Salt water tolerant<sup>2</sup>, drought resistant crops<sup>3</sup>



1. <http://a.escn.com/c4> (C4 Rice)  
 2. Roy, S. J., Negris, S., & Torres, M. (2014). Salt resistant crop plants. *Current Opinion in Biotechnology*, 26, 115-124.  
 3. Wang, J., et al. "Enhanced drought tolerance by CRISPR/Cas9-mediated DNA-PK3 management in tomato plants." *Journal of agricultural and food chemistry* 65:39 (2017): 8674-8682.

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## GMOs



### Opportunities

- Enhanced nutrition quality
- Increased pest & disease resistance
- Decreased crop losses
- Conservation tillage**
- Reduced herbicides/pesticides
- Resilience towards climate change
- Potential to increase farmer incomes

### Challenges

- Reduced biodiversity (monocultures)
- Ethical or religious concerns
- Herbicide/pesticide resistant weeds and insects
- Corporate seed consolidation
- Regulatory challenges (globally)
- Cross pollination (& organic markets)

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## CRISPR/Cas9 Editing

### Opportunities

- Remove allergens, make food more nutritious
- Use genes occurring naturally in plant-No transgenic genes added
- Ability to target & study precise DNA sequences
- Easy & rapid genome editing
- Potential treat human diseases

### Challenges

- Regulatory uncertainty
- Labeling confusion if products made through various GE techniques categorized as GMO
- Potential for unintended changes
- Ethical considerations (particularly in human gene editing)

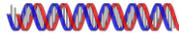


Photo credit: <https://psd.blog.com/en/dna-double-helix-science-ma-296744/>



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## Existing Genetic Biodiversity

- Biodiversity is essential for food security and nutrition.
  - Thousands of interconnected species make up a vital web of biodiversity within the ecosystems upon which global food production depends.
- The world has over 75,000 edible plants and just 200 species are used regularly
  - Just 9 crops supply 75% of food energy - wheat, rice, maize, sorghum, millet, potatoes, sweet potatoes, soybean and sugar
    - Often ultra-processed
  - 2 billion people suffer from micronutrient deficiencies
- "A failure of conservation of agrobiodiversity will continue to lead to increased food insecurity and poor nutrition and health outcomes."



- Convention on Biological Diversity, 2015

<http://www.biodiversityconvention.org/>



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## Scaling Up Biodiversity

- Single-nutrient approaches (such as vitamin A supplementation) rarely see much success when aiming to solve malnutrition.
  - This is because micronutrient deficiencies rarely occur in isolation.
- Scaling up existing biodiversity can be a sustainable solution to solving nutrient deficiencies



<http://www.fao.org/biodiversity/en/>



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*G.M.O. Foods Will Soon Require Labels. What Will the Labels Say?*



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**GMO Labeling Update**

- State legislation has been attempted for decades to label GMOs.
  - Some manufacturers voluntarily placed labels on their genetically engineered foods nationwide.
- A federal labelling bill was signed into law by President Barack Obama in 2016 requiring the labelling of foods containing genetically modified ingredients
  - Term will be Bioengineered (BE)



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**Labelling Options**

There will most likely be 3 ways to disclose BE foods

1. \* Contains bioengineered ingredient
2. QR code that directs consumer to website
3. BE Symbol (below; under development)



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Higher yields, for starters, which means much less land taken out of natural habitat to be farmed...

Or More secure & sustainable harvests, which apart from just having more food, also means more food with less inputs. Bananas in Uganda or BT eggplant in Bangladesh.

But couple key thing about GMOs to distinguish here is... It is not a single thing. It's not an all or nothing proposition. GMO is a process. Not a product. As some would say, we're all GMOs. Every living thing has been genetically modified relative to its ancestors.



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But couple key things about GMOs to distinguish here...

It is not a single thing. It's not an all or nothing proposition. GMO is a process. Not a product. As some would say, we're all GMOs.

And, it is not a silver bullet. Even GMO proponents need to be more open-minded in looking at all available options.



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And lastly, but perhaps most importantly,

We need to look at GMOs on a case by case basis.

Banning all GMOs because you don't like one in particular is akin to banning all cars because you don't like one type of car. instead, if there's something to be genuinely concerned about that one product, let's figure that out. But don't hold the whole tech hostage.

Because there's a world of difference between a crop like round-up ready corn and a wilt-resistant banana. And that's one of the key things we tried to show and highlight in the film. GMO 2.0, what I like to call humanitarian GMOs. Bananas, golden rice, cassava, papaya, eggplant... drought-resistance, flood resistance, nitrogen fixing crops that won't need hardly any fertilizers. And on and on.



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Don't diminish their fears or dismiss their concerns out of hand. Pouring through all the science and un-bundling all these issues is hard. Scientists often forget this, I think, because it's second nature for them. It's what they trained to do their entire lives and for most of them, it is their day job. But the vast majority of the public does not have the time or the know-how to delve in and figure it out for themselves. So they tend to trust those most like them. And dismissing their concerns is the surest way to get dismissed yourself. so, what do you do?



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Well first, don't start by answering questions with data, or wonky scientific jargon. Try to put yourself in their shoes and ask questions until you have a sense of what the core concern really is. Alison and the ladies. More of a corporate concern. story of our two south African farmers - musu, GMO farmer, and John, agroecologist. John very anti GMO, which ultimately came down to fear of the unknown. But musu walked John through his corn and soy fields and saw first hand the benefits. Ultimately comparing these crops to vaccinations you would get for your kids, so that they can be as strong as possible.



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Then, once some measure of trust has been built up, show how the thing you're interested in, GMOs for example, can help the thing they care about. GMO skeptics, I think, unilaterally agree that the health of our planet is of the utmost concern, and that farming can always be more sustainable. ok, great. GMO proponents do too. So let's highlight where and how GMOs can help with that...



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## Communicating With Consumers



### Listen

- Food is personal, cultural, and spiritual.
  - Science isn't always the motivation behind people's decisions

### Recognize

- That no technology is risk-free
- New technology has risks & opportunities

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## Our Role as Registered Dietitians



- Think creatively about the future of food and sustainable diets
  - Embrace best practices of all kinds of agriculture
- Apply our expertise with other professionals
- We are the liaisons between science and consumers

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## Want To Learn More?



- National Academies of Science. Genetically Engineered Crops: Experiences and Prospects. National Academies Press. 2016. <https://nas-sites.org/genetically-engineered-crops/2016/05/17/report/>
- FutureFood 2050: How Ingenuity Will Feed the World <http://futurefood2050.com/>
- Food & Agriculture Organization of the United Nation - [www.fao.org/biotech](http://www.fao.org/biotech)
- U.S. Department of Agriculture - [www.aphis-usda.org](http://www.aphis-usda.org)
- The International Crops Research Institute for the Semi-Arid Tropics - <http://www.icrisat.org>

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So to recap here, listen, empathize and then highlight benefits.



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This is the big mistake Monsanto made... farmers/roundup ready... vacuum of info. Would be a totally diff convo is the first GMO was golden rice or better, allergy-free peanuts. I know all the parent friends we have in Brooklyn would change their minds about this tech in a heartbeat if they could send their kids to school with allergy-free peanut butter sandwiches.

1st world problems. I know :)



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These insights and tips aside, it's still hard. A lot of people are still going to be skeptical. It's because food is so personal. Our food choices make up our identity and for a lot of people, our cultural associations.

Tamar Haspel has my favorite line in the film, when was the last time you changed your mind?



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Here's the thing. It's hard but as Lynas and others show it does happen.

- It's not an aha moment.
- It's a journey. A journey of opening up minds. Or at the very least exposing them to new sources of information.
- It's a journey of acknowledging nuance. If I'm in a convo with someone and they think it's all this or all that, then My true believer radar goes off and I'm going to be inclined to be a little more skeptical.
- Also, beware of financial or ideological dogs in the fight. That doesn't mean they're ipso facto wrong, but look for those findings to be repeated independently. On both sides. The graphic that blew everybody's minds was the one showing whole foods is bigger than Monsanto. And that was before bezos.




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But the best piece of advice for dealing with confirmation bias... Reach across the aisle & Find the smartest people you can who disagree with you and listen. Just listen. Show them respect. Empathize.

And you'll change. Or at least be open to change.




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Empathize then educate.

Connect through values.

Dialogue, not diatribe.

Tell human stories.




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It's not GMO or ORGANIC. It's not a zero-sum game. Look for yes and.



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You'll see that a breeding technique can go together with a farming system.

I agree with a consumers right to know and labelling, but fundamental to that argument is the right to choose. And yet that's what many of the activists are looking to take away. They want to outright ban this tech that can do the world a lot of good. You don't want to eat it? No prob. But don't let the minority block innovation for the majority.

And last but not least, I don't think there's anybody in the world who makes this last point better than Neil deGrasse Tyson, here's a clip from one of our Q&A's with him...



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## Credit Claiming



You must complete a brief evaluation of the program in order to obtain your certificate. The evaluation will be available for one year; you do not need to complete it on September 27, 2018.

**Credit Claiming Instructions:**

1. Go to [CE.TodaysDietitian.com/FoodEvolution](http://CE.TodaysDietitian.com/FoodEvolution) OR log on to [CE.TodaysDietitian.com](http://CE.TodaysDietitian.com), go to "My Courses" and click on the webinar title.
2. Click "Take Course" on the webinar description page.
3. Select "Start/Resume Course" to complete and submit the evaluation.
4. Download and print your certificate.

**Please Note:** If you access the Evaluation between 3-4 pm ET on 9/27, you may experience a slow connection due to a high volume of users.

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